

# MARKING SCHEME

1

Computer generation

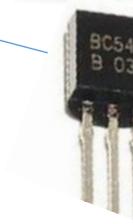
Technology used

1<sup>st</sup> Generation

2<sup>nd</sup> Generation

3<sup>rd</sup> Generation

4<sup>th</sup> Generation



(any correct pair @ 1 mark each)

2

Text before formatting	Text after formatting	Formatting Applied
VAST.	VAST.	<b>Kerning ( 1/2 mark)</b> <b>Examiner notes</b> Kerning is the process of adjusting the spacing between characters in a <b>proportional font</b> , usually to achieve a visually pleasing result. Kerning adjusts the <b>space between individual letter</b> forms
VAST.	V A S T .	<b>Tracking( 1/2 mark)</b> <b>Examiner notes:</b> Tracking (letter-spacing) adjusts spacing <b>uniformly</b> over a range of characters.

(1/2 mark per answer 1 = 1 marks)

3

Web conference	Video-conferencing
an online meeting that involves audio and, <b>may be</b> video communication between participants	an online meeting that involves audio and, <b>definitely</b> video communication between participants
Mainly meant for host/panelist only to present material	All participants have an equal chance at presenting material
Main meant for content sharing	Mainly meant for group discussion
Participants listens mainly listen to presenter	Every participant is a presenter and every presenter is a participant.
Presenter doesn't see participants	Presenter and participants see each other over video screen

4

1<sup>st</sup> **two** from:

- Spam could contain viruses
- Spam could contain spyware that record your key depressions ->.this could send messages out to alert others that the email address is live
- Spam can fill up your inbox
- Spam may have links to fraudulent websites

**(1<sup>st</sup> one @ 2 marks. Must be explained.)**

5)

(a)

- Observation
- Questionnaire
- Examination of documents

**(1<sup>st</sup> two @ ½ mark=1 mark)**

(b)

**The interviewee may be uneasy with the questioning - .as it is not anonymous**

- **Time consuming to interview all the users- *the interviews are carried out one at a time***
- **Both the interviewee and the interviewer have to be free at the same time** - which can cause time problems
- **May be a language problem-*this increases the time explaining all sections***
- **May give an answer they think the interviewer is trying to elicit- *the interviewer could be biased/leading questions***
- **Disillusioned workers may give an answer that jeopardises the project-*they could give a biased view/too vocal***
- **They cannot give the answer they want - *as the interview is not anonymous/due to peer pressure***
- **Costly to the employers -*time for the worker being off job***

**(1<sup>st</sup> One explained at 2 marks: 1mark for description, 1 mark for reason)**

6

**Transmission of data** between two or more computers within a computer

7)

- An expert system may help the doctor make a more accurate diagnosis
- An expert system uses data from many experts therefore it contains more knowledge than a single doctor
- Cheaper than regularly re-training the doctor
- The expert system's knowledge may be more up to date than the knowledge of a single doctor
- Cheaper than employing many specialists
- The diagnoses given are more consistent

**(1<sup>st</sup> three @ 1 mark = 3 marks)**

8

a)

**Compressed hours**

:

- The worker completes the normal working hours per week – but works for fewer days
- For example, a 40-hour week compressed into 4 days not 5

Flexible hours

**whereas:**

**Flexible hours**

- Workers complete the same number of hours over a working week but can choose when to start and end in agreement with the manager
- Allows for workers to complete the school run or miss rush hour

**(2 marks MAAW, difference must be shown)**

b)

- By working on the same task collaboratively/ interactively over the internet/network
- By enabling distribution of task to different individuals online
- Enabling workers who are physically/ globally far apart work on the same task/document collaboratively

**(1<sup>st</sup> one @ 1 mark)**

**9**

Some hackers are criminals and use their computer skills to harm or damage computer systems. These people are called black hat hackers. White hat hackers, on the other hand, use their computer skills to perform ethical hacking.

**Ethical Hacking**

Ethical hacking can determine vulnerabilities in a computer system. The goal of ethical hacking is to determine how to break into a system owned by a company, in order to prevent others from attacking it. If a white hat hacker can break into a system, a black hat hacker may be able to do the same.

**10**

1 mark for method, 1 mark for appropriate advantage.

**Parallel running.:** Running old and new system concurrently for a while till new system stabilises

.

...has a backup of the data

**Pilot running:** Implementing the new system in section/branch of an organization then rolling it out to all other sections after it passes all trials successfully

...only affects one branch if system goes wrong/other branches can learn from the branch's mistakes

**Phased implementation.:** replacing old system portion by portion with the new system until entire system is replaced

...if system fails still have most of old system to fall back on «staff can be trained gradually

**11**

**12**

- Drinks can spill and cause short circuits that may damage computers
- Food particles get into spaces between keys jamming them
- Food may distract learning in the lab
- Risk of food getting contaminated with hazardous materials in the lab such as cleaning liquids
- Slippery food items may fall on the floor leading to accidents
- Food wrapping makes the lab dirty
- Learners touching keyboard with sticky food items such as chocolate making them sticky and unfriendly to the next users

**13**

Designed to help programmers/systems analysts...

...to improve a system.

...to maintain a system.

...to upgrade a system.

**14**

- Spelling errors
- Information requested that the bank would not ask for e.g. password and username
- personal information Not personalised – name or part of account number
- Hyperlink not usually given
- Inconsistency i.e. manager and Chief Customer Officer
- Allow examples of the data from the email

**16)**

a)

i.

A programming language is a set of symbols and patterns that are used following a predetermined syntax and logic to write/issue computer instructions

A programming language is a vocabulary and set of grammatical rules for instructing a computer

(1 MK)

ii.

A high-level language (HLL) is a programming language such as C, FORTRAN, or Pascal that enables a programmer to write programs that are more or less independent of a particular type of computer architecture

Language written in English like statements./written using syntax that is close to human language and intuitive hence human friendly

(1 Mark)

iii

Programming method in which data and procedure/instructions that work on the data are stored together into a container called an object

b)

**17(a)**

Electronic components that work together to receive data, process it into information using programs, the output the information

( **Evidence of components ½ , evidence of input ½ , evidence of processing ½ , evidence of output ½ , evidence of programs/control ½ marked in pairs upto maximum of 2**)

**(b)**

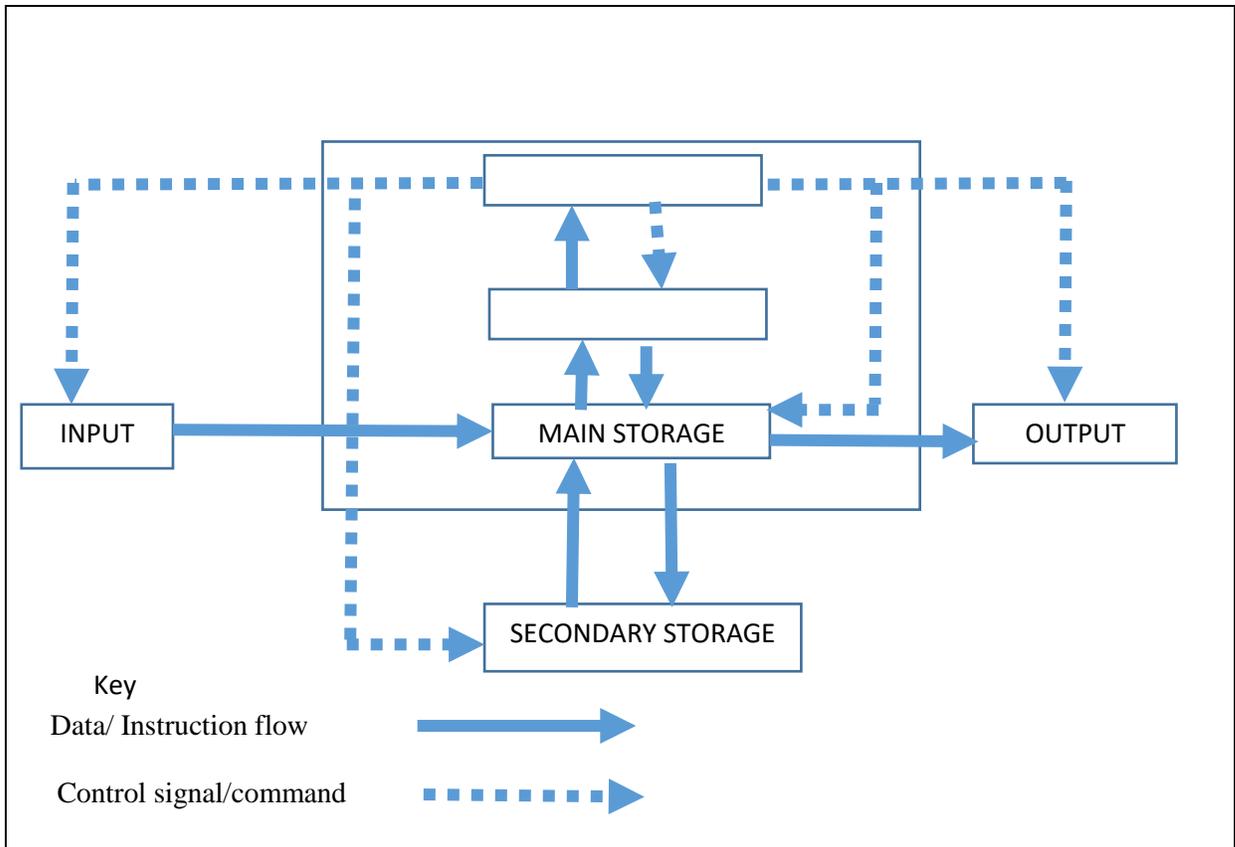
**(i)**

- If computer is switched off, work in RAM is lost but backing storage stores data for future use
  - More likely that data is accidentally deleted in RAM- the copy in the secondary storage can be retrieved
  - RAM is more expensive than backing storage per unit of memory - storing most information/information that is currently not being processed; in secondary storage is therefore cost effective
  - RAM is bulkier than secondary storage per unit of memory - to store a lot of information will required huge devices
  - Software package may be so large that it is physically impossible for RAM to store it- only a portion required for processing/execution will be uploaded into RAM and the rest remains on the secondary storage such as HDD.
  - Operating system may be so large that it is physically impossible for ROM to store it.- can only be therefore store in secondary storage
  - Data may need to be transferred from one computer to another and can't do that with RAM
- Any 2 @ 2 marks**

**(ii)**

- ROM Contains Firmware – enables computer to configure itself for use by e.g., running BIOS
  - RAM hold instructions that are currently being executed
  - There needs to be memory that holds the work that is being currently done by the user
  - here needs to be memory that holds the software that is being currently used by the user
- any two @ 2 marks each**

**(c)**



18

(a)

(i)

**Touchscreen technology** is an electronic visual **display** that a user can control by **touching** the **screen** with one or more fingers.

(1 mark)

(ii)

CLI	GUI
<ol style="list-style-type: none"> <li>1. User type command statements</li> <li>2. Requires less memory</li> <li>3. Users must memorise commands</li> <li>4. Ideal for use with devices with small screens</li> <li>5. Faster operating system due to low resource demand</li> <li>6. Only needs keyboard to operate</li> </ol>	<ol style="list-style-type: none"> <li>1. Use click on icons for commands</li> <li>2. Require more memory</li> <li>3. Users need not memorise commands as icon act as mnemonics</li> <li>4. Require devices with large screens for icons to occupy</li> <li>5. Slower operating system due to high resource requirements</li> <li>6. Needs both keyboard and mouse to operate</li> </ol>

(b)

(c)

(i) Running more than one OS on your system.

Separating valuable files to minimize corruption risk.

Allocating specific system space, applications, and data for specific uses.

Storing frequently used programs and accessed data nearby to improve performance.

**(1<sup>st</sup> one at 2 mark)**

ii)

- Minimize risk of system crash – by marking bad sectors thus preventing data from being stored in those sectors
- Check defragmentation status so as to determine a need to defragment the disk thus increase performance in access.
- 

(d)

**Authenticating users:** user names and passwords so as to only allow genuine users

**Utilities:** provide utilities that enable users clear malware, diagnose and fix system threats

**Automation:** Automate locking of the system if left idle by user.

**Timer locking:** be able to lock/disable system if an attempt to log into the system fails after a given number of attempts

**Keep log** of system activity so as to enable auditing of the computer system

**(First 2 @ 2 marks each =4 marks)**

19)

(a)

(i) Mail merge

**(½ Mark)**

(ii) Word wrap

**(1/2 mark)**

(iii)

- Alter margin size
- Decrease font size
- Change font

**(1st two and 1 mark each)**

(b)

i)

Field Name	Data Type
Examination_ID	Text
Name_of_Subject	Text
Examination_Level	Boolean
Date_of_Exam	Date

**(½ mark per each correct pair X 2 = 1 mark)**

ii).

Date\_of\_exam>26/06/2021 or Date\_of\_exam>=27/06/2018

**( 1 mark for Date\_of\_exam>26/06/2021 or Date\_of\_exam >=27/06/2021)**

**NB: Ignore absence of # tags before and after the dates.**

iii)

Student table

Field Name	Data Type
Student_ID	Text/Number
Name_of_Student	Text

Award mark only if

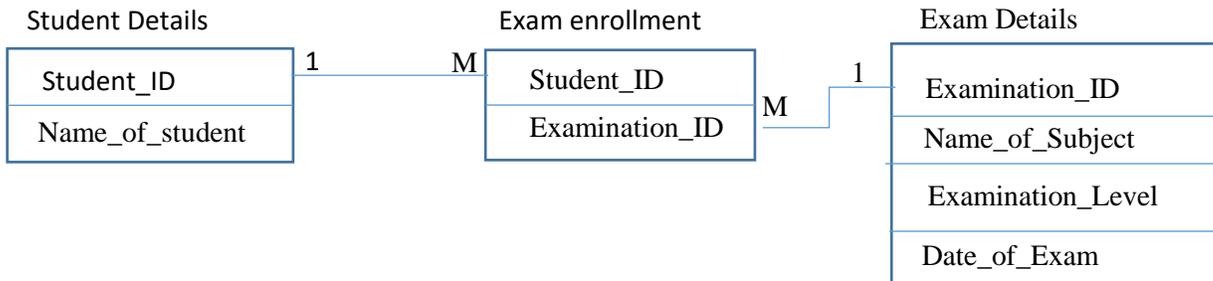
- The table has be clearly labeled as student table
  - Contains at least two fields
  - Must contain a key field
  - The second field must be relevant.
- (Award 1 mark for both appropriate name and data type MAAW)

Student exam registration details

Field Name	Data Type
Student_ID	Text/Number
Examination_ID	Text

Award mark only if

- The table has be clearly labeled as student table
  - Contains at least two fields
  - Must contain a key field
  - The second field must be relevant.
  - The examination\_id data type **MUST** identified in b(i)
- (Award 1 mark for both appropriate name and data type MAAW)



To award mark, the following basics must be met

- Student detail table and at least the student\_id included
- Enrollment table included with at least the fields student\_ID and Examination\_ID
- Exam details table included with at least the field Examination\_ID
- Lines linking the tables are included.
- Link between student and exam enrollment table is on student\_id fields
- Link between exam enrollment table and exam details table is based on examination\_id field.

(Award 1 mark per relationship X 2 = 2marks)

(c)

(i) =COUNTIF(E2:E10,"<=33")

Function name [1], range and criteria [1] (function name must be valid for range and criteria to earn mark)

(ii) **FOUR** from:

Countif functions have a range and a criteria argument [1]

In this example the range is A2:A10 [1]

The criterion is <31 [1]

It searches through the range A2:A10 [1]

Counts the number of cells/values... [1]

...that contain numeric values... [1]

...that have a value less than 31 [1]

Returns/displays that count. [1]

**(Any 4 @ 1 mark a pair up to a maximum of 2 marks)**

**(iii)**

9-4 is 5 [1]

But this 5 now includes the blank cells/includes those who haven't worked at all /The blank cells are not greater than 33 but are still included [1]

**(2 marks)**

**20**

(a) Computer is a by-state device

1 is used to represent one state, 0 is used to represent the other state

Combination of 1's and 0's are used to generate code that represent data

Eight bits, represent a byte

A byte represents a character.

**( First 3 @ 1 mark each)**

**(b)**

Using eight bits	Using five bits
<ul style="list-style-type: none"><li>• Conversion of 7 to binary equivalent i.e. 111 ( ½ )</li><li>• Padding to eight bit 00000111 ( ½ )</li><li>• Determining ones complement: 11111000 ( ½ )</li><li>• <b>Determining twos complement : 11111001 ( ½ )</b></li><li>• conversion of 8 to binary equivalent i.e., 1000( ½ )</li><li>• Padding to eight 00001000 ( ½ )</li><li>• Determine one's complement 11110111 ( ½ )</li></ul>	<ul style="list-style-type: none"><li>• Conversion of 7 to binary equivalent i.e. 111 ( ½ )</li><li>• Padding to five bits 00111( ½ )</li><li>• Determining ones complement: 11000 ( ½ )</li><li>• <b>Determining twos complement 11001 ( ½ )</b></li><li>• conversion of 8 to binary equivalent i.e., 1000( ½ )</li><li>• Padding to eight or five bits 01000( ½ )</li><li>• Determine one's complement 10111( ½ )</li><li>• <b>Determine two's complement 11000( ½ )</b></li></ul>

<ul style="list-style-type: none"> <li>• Determine two's complement 11111000 ( ½ )</li> <li>• Add the two complements 11111000+11111001=111110001( ½ )</li> <li>• Ignore overflow = 11110001 ( ½ )</li> <li>• Get denary equivalent</li> <li>• Subtract 1 = 111110000 ( ½ )</li> <li>• Flip 000001111( ½ )</li> <li>• Convert to denary</li> <li>• <math>2^3+2^2+2^1+2^0 = 15( ½ )</math></li> <li>•</li> <li>• Hence ans =-15 ( ½ )</li> <li>• (Award up to a maximum of 6)</li> </ul>	<ul style="list-style-type: none"> <li>• Add the two complements 11000+11001=110001 ( ½ )</li> <li>• Ignore overflow = 10001 ( ½ )</li> <li>• Get denary equivalent</li> <li>• Subtract 1 = 10000 ( ½ )</li> <li>• Flip 01111( ½ )</li> <li>• Convert to denary</li> <li>• <math>2^3+2^2+2^1+2^0 = 15( ½ )</math></li> <li>•</li> <li>• Hence ans =-15 ( ½ )</li> <li>• (Award up to a maximum of 6)</li> </ul>
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(c)

- i) **Mechanical : use to machines with moving parts to process data such as typewriters**  
**Manual: use of pen and paper to process data ( 2 MKS)**
- ii) **Sequential: data stored in a predetermined order usually based on key field of a record; serial data store in the order in which it's created. (2mks)**
- iii) **Interactive: processing of data and presentation of output is immediate but requires human response to the output for any further activity whereas in real time processing of data and presentation of output is immediate but does not require human response to the output for further activity as the systems automatically responds to the output accordingly. (2mks)**

